ARGYNNIS CYBELE FABR. FORMA *BARTSCHI* F. NOV.

By William Reiff.[1]

Last spring while I was examining the collection of Lepidoptera belonging to Mr. Rudolf C. B. Bartsch of West Roxbury, Mass., we were talking on the always interesting theme of the variability of butterflies. Mr. Bartsch told me on this occasion that he possessed a very peculiar but much damaged Argynnis, which he had captured in West Roxbury, Mass., during the first week of July, 1907, together with two other specimens of the same kind. This specimen being in the best condition of all, he had kept but did not save the two other individuals as they were practically ruined. This specimen had the wings partially spread and on account of its injured condition Mr. Bartsch had placed it in a box by itself and laid it aside. He gladly fulfilled my very natural desire to see the interesting butterfly, and upon opening the box I was surprised to see a splendid *Argynnis*, which unfortunately had the wings seriously damaged and the body badly eaten by Dermestes. It was an *Argynnis* form which I had never seen before, neither in nature nor produced by artificial means. The specimen, a male, belongs without doubt to the *cybele* type. Against this identification the only argument would be the narrow, nearly faded light yellow band upon the under side of the hind wings, which is very broad in *cybele*. If we lay stress on this character, we might be led to suppose that we had a form before us belonging to the type *alcestis* Edwards. But this is impossible, since *alcestis* is an exclusively western subspecies. The eastern form *aphrodite* Fabr., which runs parallel with *alcestis* cannot be considered in this connection, since in *aphrodite* not only is the base of the underside of the fore wings always very red but the other colors have little conformity with those of *cybele*. There have not been seen, according to my knowledge, any specimens of *aphrodite* in West Roxbury and vicinity. Moreover, the place in which the aberration was taken is an isolated swampy meadow, almost entirely

1 Contributions from the Entomological Laboratory of the Bussey Institution, Harvard University, No. 33.

surrounded by woods, and a flight to this place from localities far away is highly improbable.

The two photographs reproduced on the accompanying plate show very well the upper and under side of the specimen. It will be noticed that the fore wings do not have the breadth of normal *Argynnis* forms, while the hind wings show a more oval rounding than usual. All rows of spots and points beyond the base are confluent into more or less distinct bands and this is true both of the upper and under side of all the wings. It is this which gives the specimen its extraordinary appearance. The bands nearest the border are more distinct and complete than the inner bands, but except for the yellow on the upper side, which is somewhat lighter than usual, the colors are almost normal.

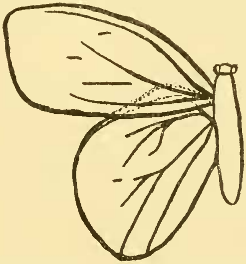


Fig. 1. *Argynnis cybele* Fabr., forma *bartschi* Reiff. Wing venation.

Now what is the cause of this peculiar aberration? At first I thought that I could consider it as a mutation, produced by some external influence, until I carefully examined the venation. Then I found that it was a "peroneurous aberration," *i. e.*, an aberration, which is produced by the absence of one or more veins or parts of veins. The expression "peroneurous aberration" was created by Professor Spengel of Giessen (Germany), from the Greek πηρός-aborted. A short time ago I described a "peroneurous aberration" of *Papilio machaon* in a paper which will appear in the next issue of the "Zeitschrift für wissenschaftliche Insekten Biologie." In the accompanying drawing I represent the venation of the *Argynnis.* The venation in the two

pairs of wings is similar. In comparing this drawing with the two photographs it will be seen that upon all those parts of the wings where the veins are present in a normal form, the markings are also normal. This is shown most clearly upon the base of the underside of the hind wings. All those parts of the wings, however, from which the venation is absent, are aberratively modified, the modification increasing as we pass towards the border of the wings. In a normal *cybele* wing, the black, yellow and silver markings are separated in more or less distinct isolated spots and points in consequence of the venation, while in the specimen under consideration all the rows of spots fuse to form complete bands on the parts where the venation is absent. The drawing and the photographs show that the form must have been produced in the manner just described. Moreover, the abnormal shape of the wings may also be traced to the partly missing venation, as the wings, of course, were arrested in their development on those parts which had no complete veins.

This examination also explains why Mr. Bartsch captured damaged specimens, since a butterfly, which lacks almost every vein beyond the middle portion of the wings, is inevitably liable to the danger of injuring its wings upon its first attempt to fly, because it exposes to the resistance of the air a large part of the surface of its wings which is devoid of every support. If the butterfly is struck by a gust of wind, or its wings occasionally strike against branches or leaves, the injury to the specimen will soon be complete. Our specimen, which was restored only after considerable careful work, had suffered most from a damage of the fore wings.

According to Mr. Bartsch's statements, the flight of this form differs considerably from the flight of the normal *Argynnis cybele* which occurs in large numbers in the same locality. He says it has a quick but more wavering flight, and that any flying specimen of the aberration can be readily noticed. The fact that in a single day in 1907 Mr. Bartsch caught three specimens of this form, induced me to try my luck during the past summer in the same locality. But on both days when I began to collect there the weather was so unfavorable that Lepidoptera would not fly. Mr. Bartsch was more fortunate, as he succeeded in capturing another specimen of the same form in the same locality this year,

but it was a badly mangled individual. It would seem, therefore, that this form is not so very rare in this locality, although we should expect it to be very scarce on account of the peculiarity of its origin. Of the peroneurous *Papilio machaon* aberration, above mentioned, I secured two specimens from only 75 pupæ, which is also a proof that peroneurous aberrations can develop with comparative ease, though the conditions for such development are still unknown.

Mr. Bartsch very generously presented me with the interesting specimen of Argynnis and I have placed it in the collection of the Bussey Institution. In honor of the discoverer I would name this peroneurous aberration, *Argynnis cybele* Fabr. forma *Bartschi*. Its diagnosis would be the following:

Alarum venæ post mediam ad extremam partim immaturæ vel obsoletæ; propterea macularum seriebus omnibus in vittis confluentibus; ubivis venæ partim vel omnino obsoletæ sunt. Alæ contractæ, propterea aspectu aliquantum productæ.

Type: 1 ♂ in the collection of the Bussey Institution.

GEOMETRID NOTES.

A New Variety of Nyctobia.

By L. W. Swett.

Boston, Mass.

Nyctobia limitaria Walk., **reiffi** var. nov.

Exp. 25 mm., palpi short, white typed body and thorax ash gray, antennæ black and white ringed. Fore wings ash gray, first a reddish brown basal band running outward below costa in a strong curve to median vein where it recurves to inner margin. Beyond this is a pale gray space 3 mm. wide where there is a broad chestnut brown band running from costa to inner margin, the inner edge of which is very irregular, the black linear discal spot is just visible, the extra discal edge of this band is bent outwards below costa at discal spot and inward towards inner margin, beyond this the wing is pale ash and two faint brown hair lines run brokenly to inner margin. Twin dots at ends of veins in the long ashen gray fringe. Hind wings light ash with a faint extra discal brown band, below which the wing is lighter. The fore wings beneath are light ashen with band showing through faintly the discal dot is black, and appears on hind wings also, which are same as fore